2879

Docket No.: 1460.1021

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of:

Yoshikazu KANAZAWA, et al.

Serial No. 09/881,740 Group Art Unit: 2879

Confirmation No. 8759

Filed: June 18, 2001 Examiner: Holly R. Harper

For: PLASMA DISPLAY DEVICE WITH SHIELDING PARTS ON TRANSPARENT ELECTRODES (AS AMENDED)

SUPPLEMENTAL AMENDMENT

Commissioner for Patents
PO Box 1450
Alexandria, VA 22313-1450

Sir:

Supplementing the Amendment filed August 7, 2003, to the Office Action mailed April 7, 2003, the following supplemental amendments and remarks are respectfully submitted. Reconsideration of the claims is respectfully requested.

CERTIFICATE UNDER 37 CFR 1.8(a)
I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450
on 9-26, 2003
STAAS & HALSEY
By: Michelle Spatic
Date: 9-26-03

IN THE TITLE:

Please AMEND the title, as follows:

PLASMA DISPLAY DEVICE WITH SHIELDING PARTS ON ~~THE~~ TRANSPARENT ELECTRODES

IN THE SPECIFICATION:

The specification as amended below with replacement paragraphs shows added text with underlining and deleted text with ~~strikethrough~~.

Please REPLACE the paragraph beginning at page 2, line 11, as follows:

As shown in Fig. 2, the discharge electrodes 12, 14 and the black stripes 22 are formed on the ~~side with~~ inner, or interior, surface, adjacent the discharge space 28, of the front substrate 26, the exterior surface of which ~~lies on the observer side to make~~ is a display surface for an observer. A dielectric layer 30 for holding a wall charge and a protection layer 32 made of magnesium oxide (MgO) are formed over the discharge electrodes 12, 14 and the black stripes 22.

Please REPLACE the paragraph beginning at page 2, line 16, as follows:

Meanwhile, as shown in Fig. 3, the address electrodes 16 and the ribs 24 are formed on ~~the side with~~ an inner, or interior, surface, adjacent the discharge space 28, of the rear substrate 34. A dielectric layer 36 is formed over the address electrodes 16. The ribs 24 are formed on this dielectric layer 36. Phosphor layers R, G, and B are formed over the inclined planes of the ribs 24 and the dielectric layer 36 surrounded by the ribs 24. The phosphor layers R, G, and B respectively emit red light, green light, and blue light, by the incidence of discharge-generated ultraviolet rays. That is, in this example, a single pixel capable of full color display is composed of three cells.

Please REPLACE the paragraph spanning pages 2-3, as follows:

In the above-described PDP, before pixel display, a reset pulse is applied to ~~between~~ (i.e., across) the discharge electrodes 12 and 14 to initialize the cells (reset period). Then, address pulses are applied to address electrodes 16 that correspond to data to be displayed, thereby selecting cells C to emit light (address period). Then, sustain pulses are applied to ~~between~~ (i.e., across) the discharge electrodes 12 and 14 over periods corresponding to the brightness gradations, to ~~make a~~ sustain discharges in ~~for~~ the selected cells C (sustentation, or sustain, period). Ultraviolet rays generated from the sustain-discharge excite the phosphor layer R (or G, B) to emit light. Then, the light is transmitted through the transparent electrodes 18 and

the front substrate 26 to radiate out to the exterior, thereby displaying an image.

Please AMEND the paragraph beginning at page 3, line 11, as follows:

The PDP 38 has a plurality of discharge electrodes 40 formed at regular intervals. Address electrodes 16 and ribs 24 are arranged as in Fig. 1. The black stripes 22 shown in Fig. 1 are not formed in this PDP 38. On this account, the discharge electrodes 40, except the ~~ones on both~~ electrodes 40 at opposite ends, or edges, can ~~make a~~ produce discharges, with their respective adjacent discharge electrodes 40 on both sides. That is, cells C, or light emission units, are formed to overlap with each other along the address electrodes 16. Display lines L are also formed to overlap with each other. As a result, given an equal definition (i.e., an equal number of lines L), the number of discharge electrodes ~~becomes~~ is only about half that in the PDP 10 of Fig. 1. The absence of non-luminescence regions allows an improvement in brightness if the panel sizes are identical.

Please AMEND the paragraph beginning at page 10, line 2, as follows:

As in Fig. 6, the PDP 42 has a front substrate 26 and a rear substrate 34 which are arranged to face, or oppose, each other across discharge space 28. The discharge space 28 is filled with, for example, mixed gas of neon (Ne) and xenon (Xe). The transparent electrodes 18 are formed on the ~~side with~~ interior surface, adjacent the discharge space 28, of the front substrate 26, and the shielding parts 46 (bus electrodes 44) are formed on (under, in the diagram) the transparent electrodes 18. A dielectric layer 30 and a protection layer 32 made of magnesium oxide (MgO) are formed over the discharge electrodes 40.

Please AMEND the paragraph beginning at page 11, line 8, as follows:

The shielding parts 46 are formed of the same material as that of the bus electrodes 44. Therefore, the shielding parts 46 can be formed simultaneously during the fabrication process of the bus electrodes 44. This prevents the fabrication process from becoming complicated. That is, the shielding parts 46 can be formed ~~only~~ simply by changing the mask pattern of the bus electrodes 44, requiring no mask dedicated to the shielding parts 46.

Please AMEND the paragraph beginning at page 12, line 5, as follows:

Shielding parts 60 are formed on the transparent electrodes 56, ~~at~~ extending from the sides ~~with~~ of the respective opposing parts 56b ~~of~~ integral with the tips of the associated projecting parts 56a, ~~by~~ using the same material as that of the bus electrode 58. The shielding parts 60 are formed at positions of lower luminescent intensities. That is, the shielding parts 60 are formed away from the regions ~~with~~ of high luminescent intensity, where the opposing parts 56b face of two adjacent discharge electrodes each other and define discharge cell.

Please AMEND the paragraph beginning at page 14, line 1, as follows:

Reducing the area of the shielding parts 74B ~~in area~~ makes the blue light relatively higher in brightness. This allows an increase of the color temperature in displaying white. Here, the bright room contrast ratio is improved by the shielding parts 74G and 74R of relatively greater areas. The shielding parts 74R, 74G, and 74B are formed in positions of lower luminescent intensities. Therefore, the formation of these shielding parts 74R, 74G, and 74B causes a minimum drop in brightness.

REMARKS

In accordance with the foregoing, the Title of the invention has been further amended to delete the word "the" and thereby remove possible lack of antecedent support issues.

In addition, various of the claims have been amended to further improve form. No new matter is presented.

Approval and entry of the foregoing title and claim amendments are respectfully requested.

ITEM 3: REJECTION OF CLAIMS 2 AND 13 UNDER 35 USC § 112, ¶ 2

The Examiner rejected claims 2 and 13 under 35 USC § 112, ¶ 2, as being indefinite and unclear because of the recitation "portions" in the claims. In the response filed August 8, 2003, claims 2 and 13 were amended to overcome the rejection but, in retrospect, applicants feel that the amendatory corrections did not achieve the intended results and, accordingly, claims 2 and 13 have been further amended herein and are now believed to be free of § 112, ¶ 2 objections.

The same amendments as in claims 2 and 13 have also been made in claims 11 and 22.

ITEM 4: REJECTION OF CLAIMS 1-3, 7-8, 12-14 AND 18-19 FOR ANTICIPATION UNDER 35 USC § 102(e) BY SHINODA ET AL. -- SUPPLEMENTAL TRAVERSE

In each of the paragraphs of item 4 directed to respective, different claims, the Examiner uniformly contends that "the bus electrode acts as a shield and shields incident light from the exterior." It is respectfully submitted that there is no teaching of "shielding", much less of the bus electrode acting as a shield, in the Shinoda patent.

Shinoda discloses only a bus electrode 42 extending along a peripheral portion of a transparent electrode 41, the peripheral portion being remote from the opposing surfaces of the projecting portions of the transparent electrodes, and at which the gaseous discharge is produced in each corresponding cell.

The "shielding parts" recited in the claims, for example claim 1, are specified to be "formed on a corresponding transparent electrode and disposed laterally of the corresponding bus electrode." Clearly, the reading of the "shielding parts" on the Shinoda bus electrode 42

conflicts with the disclosed and recited structure of the plasma display panel in accordance with the invention. Claim 2/1 even more specifically recites that the shielding parts are formed in each cell "in conformity with portions having low luminescent intensity." In the rejection of claim 2/1, at page 3 of the Action, the first paragraph, the recitation of claim 2/1 is asserted to read on Figure 8 of Shinoda et al. and again particularly on the bus electrodes 42 in Fig. 8. However, there is no teaching in Shinoda of portions of each discharge cell having "low luminescent intensity" and thus no basis for the reading of claim 2/1 on the structure of Shinoda Fig. 8. Moreover, the Examiner's reading is clearly in error since requiring that the Shinoda bus electrode 42 be both a bus electrode and also a shielding part whereas the claims recite those as separate elements.

Claim 3 is rejected at page 3, again, simply based on Fig. 8 which the Examiner asserts has "transparent electrodes with a projecting part projecting to the center of the cell...."

In the case of claim 4/3, however, which recites that the shielding part is formed on the projecting part of the transparent electrode, the Examiner acknowledges the allowability of same.

It is respectfully submitted that the specific structure defined in claim 4/3 is only one embodiment of the generic teaching, recited in at least claim 2/1, of the shielding parts being formed "in conformity with portions where a discharge-generated light has a low luminescent intensity."

Nevertheless, applicants have amended the independent claims to more definitively recite that the shielding parts are disposed laterally of the bus electrodes--and, hence, clearly are not "readable" on the bus electrodes 42 of Shinoda et al. as in the present Action. Independent claim 12 has been similarly amended and new independent claim 25 is to like effect.

CONCLUSION

Accordingly, each of the independent claims and their respective dependent claims is submitted to distinguish patentably over the references of record. There being no other objections or rejections, it is further submitted that the application is in condition for allowance, which action is earnestly solicited.

Applicants note that an IDS has been filed concurrently with this response.

If there are any additional fees associated with filing of this Amendment, please charge the same to our Deposit Account No. 19-3935.

Respectfully submitted,

STAAS & HALSEY LLP

Date: September 25, 2003

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on 9-26, 2003
STAAS & HALSEY
By: Michelle Spatz
Date: 9-26-03

IN THE CLAIMS:

The text of all pending claims, (including withdrawn claims) is set forth below. Cancelled and not entered claims are indicated with claim number and status only. The claims as listed below show added text with underlining and deleted text with ~~strikethrough~~. The status of each claim is indicated with one of (original), (currently amended), (cancelled), (withdrawn), (new), (previously presented), or (not entered). Please AMEND claims * and ADD new claims * in accordance with the following:

1. (CURRENTLY AMENDED) A plasma display panel comprising:

~~a plurality of discharge electrodes arranged on an inner side of a front substrate provided on a side of a display surface, each of said discharge electrodes having a bus electrode and a transparent electrode connected to said bus electrode; and~~

~~shielding parts for shielding incident light from the exterior, each formed on said transparent electrode, and formed on the sides of the bus electrode~~

a plurality of discharge electrodes arranged on an interior main surface of a front substrate, an exterior main surface thereof comprising a display surface, each of said discharge electrodes comprising a bus electrode and a transparent electrode connected to said bus electrode and extending in a longitudinal direction, opposing portions of adjacent discharge electrodes, spaced in a lateral direction, defining corresponding discharge cells; and

shielding parts to shield incident light from an exterior of the front substrate, each shielding part formed on a corresponding said transparent electrode and disposed laterally of the corresponding bus electrode.

2. (CURRENTLY AMENDED) The plasma display panel according to claim 1, wherein said shielding parts are formed ~~in correspondence to regions having low luminescent intensity, the regions existing between parts that discharge generate light~~ within the cells, other than between the corresponding, opposing portions of adjacent discharge electrodes defining respective cells, in conformity with portions having low luminescent intensity.

3. (CURRENTLY AMENDED) A plasma display panel comprising:

~~a plurality of discharge electrodes arranged on an inner side of a front substrate provided on a side of a display surface, each of said discharge electrodes having a bus electrode and a transparent electrode connected to said bus electrode;~~

~~shielding parts formed on said transparent electrode to shield incident light from exterior;~~

~~a rear substrate facing said front substrate, with a discharge space in between;~~

~~a plurality of address electrodes parallel to each other, and placed along said rear substrate in a direction orthogonal to said discharge electrodes;~~

~~cells, which are units discharge-generated light are emitted in, wherein~~

~~said cells each include said transparent electrode having a narrow projecting parts projecting toward the center of the cell, and having opposing parts at a tip of said projecting part; and~~

~~said shielding parts are formed on at least one of said projecting parts and said opposing parts, and formed in correspondence to regions having low luminescent intensity, the regions existing between parts that discharge generate light~~ a plurality of discharge electrodes arranged on an interior main surface of a front substrate, an exterior main surface thereof comprising a side of a display surface, each of said discharge electrodes having a bus electrode and a transparent electrode connected to said bus electrode and extending in a longitudinal direction, opposing portions of adjacent discharge electrodes, spaced in a lateral direction, defining corresponding discharge cells;

shielding parts to shield incident light from an exterior of the front substrate, each shielding part formed on a corresponding said transparent electrode and disposed laterally of the corresponding bus electrode;

a rear substrate having an interior main surface facing the interior main surface of said front substrate, with a discharge space therebetween;

a plurality of address electrodes parallel to each other, and extending along said rear substrate in a direction orthogonal to said discharge electrodes;

cells, in which light is emitted, wherein

each cell includes narrow projecting transparent electrode parts projecting laterally toward the center of the cell, and having respective, opposing parts at tips of said projecting parts extending longitudinally; and

said shielding parts are formed on at least one of said projecting parts and said opposing parts, in correspondence to regions having low luminescent intensity relatively to each region having high luminescent intensity and existing between the laterally disposed opposing parts at which gaseous discharges producing light emission are generated.

4. (CURRENTLY AMENDED) The plasma display panel according to claim 3,

wherein said shielding parts are formed on the ~~side~~ surfaces of said projecting parts ~~which faces said opposing parts~~ and the connections thereof to the respective opposing parts.

5. (ORIGINAL) The plasma display panel according to claim 3, wherein said shielding parts are formed on said opposing parts, each of the shielding parts formed between said rib and the center of said opposing part.

6. (ORIGINAL) The plasma display panel according to claim 3, wherein said shielding parts are formed on said opposing parts, at the sides closer to said bus electrodes.

7. (ORIGINAL) The plasma display panel according to claim 1, wherein said shielding parts are formed of the same material as that of said bus electrodes.

8. (ORIGINAL) The plasma display panel according to claim 7, wherein said shielding parts are formed integral with said bus electrodes.

9. (ORIGINAL) The plasma display panel according to claim 1, wherein:

a plurality of cells, which are units discharge-generated light is emitted in, are formed along said discharge electrodes neighboring each other; and

said shielding parts formed respectively in said cells have different areas depending on the luminescent colors of said cells.

10. (ORIGINAL) The plasma display panel according to claim 9, wherein:

said cells include blue cells for emitting blue light; and

said shielding part formed in each of said blue cells have an area smaller than areas of said shielding parts formed in other cells.

11. (CURRENTLY AMENDED) The plasma display panel according to claim 1, wherein:

~~a plurality of cells, which are units discharge-generated light is emitted in, are formed along said discharge electrodes neighboring each other; and~~

~~said cells include blue cells for emitting blue light;~~

~~said shielding part in each of said blue cells is formed in a position where it blocks~~

~~discharge-generated visible light from radiating out to said exterior; and~~

~~said shielding parts in said cells other than said blue cells are formed in correspondence to regions having low luminescent intensity, the regions existing between parts that discharge-generate light~~ a plurality of cells of respective and different, plural colors of light emission define a single pixel, each pixel including a cell emitting blue light and other cells emitting other color lights; and

said shielding part in said blue cells of each pixel of a smaller area than the respective shielding parts in the other color cells of the pixel; and

said respective shielding parts in said cells of each pixel are formed in correspondence to regions of low intensity.

12. (CURRENTLY AMENDED) A plasma display panel comprising:

~~a plurality of discharge electrodes arranged on an inner side of a front substrate provided on a side of a display surface, each of said discharge electrodes having a bus electrode and a transparent electrode connected to said bus electrode, said discharge electrodes capable of discharging between neighboring electrodes on both sides; and~~

~~shielding parts for shielding incident light from the exterior, each formed along said front substrate, and formed on the sides of the bus electrode~~ a plurality of discharge electrodes arranged on an interior main surface of a front substrate, an exterior main surface thereof comprising a display surface, each of said discharge electrodes having a bus electrode and a transparent electrode connected to said bus electrode and extending in a longitudinal direction, opposing portions of adjacent discharge electrodes, spaced in a lateral direction, defining corresponding discharge cells, each said discharge electrode being capable of discharging, alternately, with each of the adjacent electrodes; and

shielding parts to shield incident light from an exterior of the front substrate, each shielding part formed along said front substrate, and disposed laterally of the corresponding bus electrode.

13. (CURRENTLY AMENDED) The plasma display panel according to claim 12, wherein said shielding parts are formed ~~in correspondence to regions having low luminescent intensity, the regions existing between parts that discharge- generate light~~ within the cells, other than between the corresponding, opposing portions of adjacent discharge electrodes defining respective cells, in conformity with portions having low luminescent intensity.

14. (CURRENTLY AMENDED) A plasma display panel comprising:

~~a plurality of discharge electrodes arranged on an inner side of a front substrate provided on a side of a display surface, each of said discharge electrodes having a bus electrode and a transparent electrode connected to said bus electrode, said discharge electrodes capable of discharging between neighboring electrodes on both sides;~~

~~shielding parts formed along said front substrate to shield incident light from exterior;~~

~~a rear substrate facing said front substrate, with a discharge space in between;~~

~~a plurality of address electrodes parallel to each other, and placed along said rear substrate in a direction orthogonal to said discharge electrodes;~~

~~cells, which are units discharge generated light are emitted in, wherein~~

~~said cells each include said transparent electrode having a narrow projecting parts projecting toward the center of the cell, and having opposing parts at a tip of said projecting part; and~~

~~said shielding parts are formed on at least one of said projecting parts and said opposing parts, and formed in correspondence to regions having low luminescent intensity, the regions existing between parts that discharge generate light~~ a plurality of discharge electrodes arranged on an interior main surface of a front substrate, an exterior main surface thereof comprising a side of a display surface, each of said discharge electrodes having a bus electrode and a transparent electrode connected to said bus electrode and extending in a longitudinal direction, opposing portions of adjacent discharge electrodes, spaced in a lateral direction, defining corresponding discharge cells;

shielding parts to shield incident light from an exterior of the front substrate, each shielding part formed on a corresponding said transparent electrode and disposed laterally of the corresponding bus electrode;

a rear substrate facing said front substrate, with a discharge space in between;

a plurality of address electrodes parallel to each other, and placed along said rear substrate in a direction orthogonal to said discharge electrodes;

cells in which light is emitted, wherein each cell includes narrow projecting transparent electrode parts projecting laterally toward the center of the cell and having respective, opposing parts at tips of said projecting parts extending longitudinally; and

said shield parts are formed on at least one of said projecting parts and said opposing parts, in correspondence to regions having low luminescent intensity relatively to each region

having high luminescent intensity and existing between the laterally disposed opposing parts at which gaseous discharges producing light emission are generated.

15. (CURRENTLY AMENDED) The plasma display panel according to claim 14, wherein said shielding parts are formed on the ~~side~~ surfaces of said projecting parts ~~which faces said opposing parts~~ and the connections thereof to the respective opposing parts.

16. (ORIGINAL) The plasma display panel according to claim 14, wherein said shielding parts are formed on said opposing parts, each of the shielding parts formed between said rib and the center of said opposing part.

17. (ORIGINAL) The plasma display panel according to claim 14, wherein said shielding parts are formed on said opposing parts, at the sides closer to said bus electrodes.

18. (ORIGINAL) The plasma display panel according to claim 12, wherein said shielding parts are formed of the same material as that of said bus electrodes.

19. (ORIGINAL) The plasma display panel according to claim 18, wherein said shielding parts are formed integral with said bus electrodes.

20. (ORIGINAL) The plasma display panel according to claim 12, wherein:

a plurality of cells, which are units discharge-generated light is emitted in, are formed along said discharge electrodes neighboring each other; and

said shielding parts formed respectively in said cells have different areas depending on the luminescent colors of said cells.

21. (ORIGINAL) The plasma display panel according to claim 20, wherein:

said cells include blue cells for emitting blue light; and

said shielding part formed in each of said blue cells have an area smaller than areas of said shielding parts formed in other cells.

22. (CURRENTLY AMENDED) The plasma display panel according to claim 12, wherein:

~~a plurality of cells, which are units discharge-generated light is emitted in, are formed along said discharge electrodes neighboring each other; and~~

~~said cells include blue cells for emitting blue light;~~

~~said shielding part in each of said blue cells is formed in a position where it blocks discharge-generated visible light from radiating out to said exterior; and~~

~~said shielding parts in said cells other than said blue cells are formed in correspondence to regions having low luminescent intensity, the regions existing between parts that discharge-generate light~~ a plurality of cells of respective and different, plural colors of light emission define a single pixel, each pixel including a cell emitting blue light and other cells emitting other color lights; and

said shielding part in said blue cells of each pixel of a smaller area than the respective shielding parts in the other color cells of the pixel; and

said respective shielding parts in said cell of each pixel are formed in correspondence to regions of low intensity.

23. (PREVIOUSLY ADDED) The plasma display panel according to claim 3, wherein each of said opposing parts are wider than each of said projecting parts.

24. (PREVIOUSLY ADDED) The plasma display panel according to claim 14, wherein each of said opposing parts are wider than each of said projecting parts.

25. (PREVIOUSLY ADDED) A plasma display panel, comprising:

front and rear substrates having opposing, interior surfaces spaced to define a discharge gap therebetween and an exterior surface of the front substrate defining a display surface;

a plurality of discharge electrodes arranged on the interior surface of the front substrate, each discharge electrode comprising a bus electrode and a transparent electrode connected to the bus electrode, adjacent, opposed portions of the transparent electrodes defining corresponding discharge cells that are spaced in the longitudinal direction;

each discharge cell having at least one region of highest luminescent intensity in the vicinity of the opposing portions of the transparent, opposed electrodes and regions of relatively lower luminescent intensity within each cell; and

a shield part disposed on the transparent electrode in each cell and disposed laterally of the corresponding bus electrode to shield incident light from the exterior of the panel in at least a

selected said region of relatively lower luminescent intensity.

26. (PREVIOUSLY ADDED) The plasma display panel according to claim 25, wherein the transparent electrodes further comprise:

a projecting, narrow part extending laterally from the bus electrode; and

an opposing part integrally formed with the narrow projecting part at a tip thereof and extending longitudinally, parallel to the bus electrode; and

in each said cell, the shielding part is formed on at least the projecting, narrow part.